

Hideaki OHBA\*: Notes on the Himalayan *Saxifraga* (1)  
Two new species in the sect. *Hirculus*\*\*

大場秀章\*: ヒマラヤ産ユキノシタ属研究 (1)  
Hirculus 節の 2 新種

The genus *Saxifraga* is one of the genera diversified conspicuously in the Himalayas. Although the Himalayan *Saxifraga* was extensively studied by Engler & Irmscher (1916, 1919), H. Smith (1958, 1960) and Hara (1979), our present knowledge is still insufficient. Towards the presentation of a revision of the Himalayan *Saxifraga*, it becomes necessary to publish new or critical taxa mainly from the Himalayas. Particularly the sections *Hirculus* and *Kabschia* show great diversities in the region from the Himalayas to S. W. China through Tibet. Several species still remain uncertain or rather confusing. Often it is difficult to distinguish a certain species distinctly from its close allies owing to the variabilities caused by the mountain-top isolation. In the high-alpine habitat where a population is isolated from others, speciation may result in narrow endemics restricted to a single peak or mountain range. If minor differences were found among populations on different mountains, one might eventually recognize as many species (or subspecies) as populations in isolated mountains. Therefore, the problem of species delimitation mostly depends on the evaluation of such minor differences. Previously I have adopted considerably broader concept for species delimitation in the case of the genus *Rhodiola*, which is also predominantly diversified in the high-alpine habitat in the same region (Ohba 1980-82). In the case of *Saxifraga*, however, I shall adopt rather narrower concept for species delimitation in order to consider the positive evaluation of these minor differences in relation with cytological and gross morphological variations among populations.

The present note deals with the descriptions of two new species of the

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section *Hirculus* grex *Hirculoideae* Engl. et Irmsch. emend. H. Smith. These species resemble *Saxifraga Hookeri* Engl. et Irmsch., *S. Moocroftiana* Wall. ex Sternb., *S. implicans* H. Smith, *S. namdoensis* H. Smith and even *S. diversifolia* Wall. ex Ser. One of these, *S. rolwalingensis*, shows a strong affinity to *S. Moocroftiana*, while the other, *S. lamninaensis*, comes near to *S. Hookeri*. The diagnostic features distinguished from their closest and resembling species will be mentioned in each description.

1) ***Saxifraga rolwalingensis* H. Ohba, sp. nov.** (Fig. 1 & 2a-c)

*Saxifragae Moocroftianae* Wall. ex Sternb. valde affinis, sed a qua caulinis floriferis multifoliatis, foliis basalibus per anthesin nunquam deficientibus, caulinis inferioribus majoribus quam mediis superioribusque, mediis oblanceolatis vel lineari-oblanceolatis non oblongis 0.7-0.9 nec 1-1.5 cm latis; petalis anguste obovatis nec obovato-oblongis nec oblongis 5-6.2 nec 4 mm latis statim distincta. *S. implicans* H. Smith tangit, ob foliis basalibus vulgo persistentibus, caulinis inferioribus basi attenuatis non cordatis; sepalis late oblongis vel ovatis nec longiuscule ovatis nervis sub apice confluentibus nec liberis et petalis anguste obovatis nec ovato-ellipticis basi attenuatis non unguiculatis nervis lateralibus pauci-ramosis nec simplicibus ab ea removenda. Ex affinitate *S. Hookeri* Engl. et Irmsch. foliis basilibus anguste spathulatis vel oblanceolatis nec ovato-oblongis nec oblongis, magnitudine  $3.5-6 \times 0.7-9$  nec  $1-2 \times 0.5-1.2$  cm, margine glabris; sepalis late oblongis vel ovatis nec lineari-oblongis, 4-5 nec 3-3.5 mm longis; petalis magnitudine  $7.5-8.5 \times 5-6.2$  nec  $6-6.5 \times$  ca 2.5 mm; caulinis floriferis paene glabris bene differt. Habitu *S. namdoensi* H. Smith similis sed foliis non lanceolatis, margine sepalorum pilis brevissimis glandulis nec albo-ferrugineis crispulis obsitis, petalis 7.5-8.5 nec usque 11 mm longis dignoscenda. A *S. Zimmermannii* Baejni ex regione Rolwalingensi petalis non unguiculatis et nervis sepalorum sub apice confluentibus recedit.

Caudicula brevissima, basi gemmifera. Caules floriferi solitarii vel raro pauci-conferti, erecti, (8)-14-25(-35) cm longi, remote 8-12-foliati, glabrescentes vel pilis albo-ferrugineo-crispulisculis 1-2 mm longis ad foliorum basin sparsissime obsiti. Foliorum basium et caulinorum laminā herbacea, trinervia, subtus sparse vel modice pilosa, pilis albo-ferrugineis crispulisculis brevissimis (usque ad circa 0.5 mm longis) obsita, supra semper glabra, margine vulgo glabra. Folia basalia ± persistentia; caulina a basi ad medium magnitudine manifeste decrescentia sed in superiore paullum decrescentia; basalia et caulinaria inferiora anguste spathulata

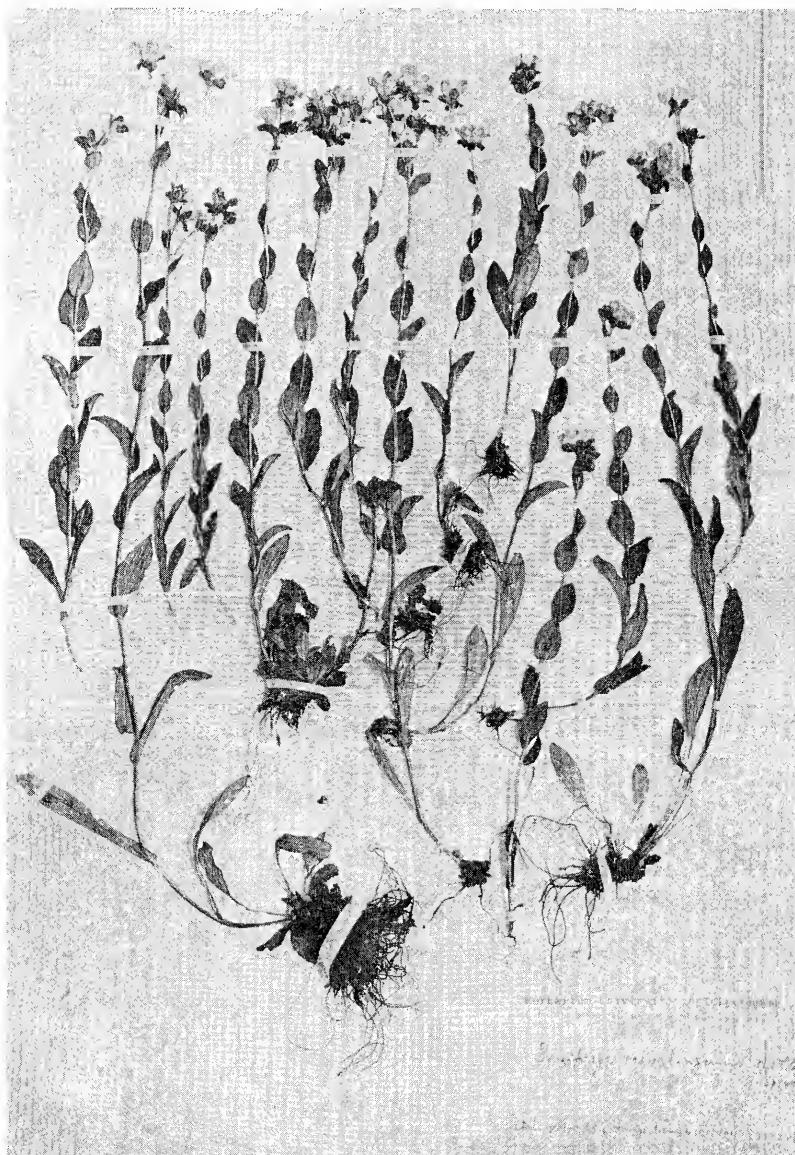


Fig. 1. *Saxifraga rolwalingensis* H. Ohba (type).

vel oblanceolata, 3.5-6 cm longa 0.7-0.9 cm lata, apice acuta sed non acuminata, basi longissime vel vere attenuata, sessilia vel petiolata, petiolo 1-2 cm longo, pilis albo-ferrugineis 1-2 mm longis sparse vel modice obtecto; media oblanceolata vel lineari-oblanceolata, 3-4(-6) cm longa, 0.7-0.9 cm lata, basi attenuata vel truncata vel raro subcordata; superiora atque bracteae oblonga vel ovato-oblonga, 1.5-2(-2.5) cm longa (0.6-)0.7(-0.8) cm lata, apice obtusa basi truncata vel subamplexicaulia, margine semper glabra. Inflorescentia corymbosa, pauciflora, flores (1-)3-5 gerens, pedicellis longioribus, vulgo 2-3 cm longis, modice vel dense glandulosis pilis circa 1 mm longis translucentibus apice atropurpureis obsitis.

Hypanthium dorso modice brevissime glanduloso-pilosum. Sepala late oblonga vel ovata, apice rotundata, margine integra, trinervia, nervis sub apice confluentibus et lateralibus pauci-ramosis, 4-5 mm longa 2-3.5(-4) mm lata, margine et dorso brevissime glanduloso-pilosa, per anthesin patentia. Petala adscendentia in anthesi, lutea sed ubique maculis aurantiacis transverse striata, anguste obovata, 7.5-8.5 mm longa 5-6.2 mm lata, apice rotundata, basi attenuata, margine integra, ecallosa, ad basin trinervia, nervis lateralibus pauci-ramosis. Stamina petalorum dimidium et totum ovariorum paullum superantia; filamentis subulatis, luteis, ca 2.5 mm longis, erectis per anthesin; antheris reniformibus, ante dehiscentem aurantiacis. Ovarium semiovoideo-conoideum, hypanthio brevissime immersum, parte libera ca 4 mm longum, in stylos brevissimos ca 1 mm longos erectos stigmate crassi-capitellato coronatos exiens. Ovula in quoque loculo numero ultra 500.

Habit. C. Nepal. Rolwaling Khola: Na—Rinaldung, alt. 4200 m. 5 Sept. 1983. Ohba, Wakabayashi & Akiyama 8331859 (TI—Holotype) & 8351298 (TI); Na—Yalung Kharka, alt. 4300 m. Ohba, Wakabayashi, Suzuki & Akiyama 8331898 (TI).

This species occurs on mossy exposed rocks in steep rocky slopes facing north.

2) *Saxifraga lamminamensis* H. Ohba, sp. nov. (Fig. 2d-f & 3)

*Saxifragae Hookeri* Engl. et Irmsch. primo aspectu maxime similis, sed foliis late vel vere lanceolatis, non ovato-oblongis nec oblongis nec anguste oblongis, utrinque sparse albido-pilosus; bracteis margine glabris nec dense breviter glanduloso-pilosus; sepalis longitudine 4-4.5 nec 3-3.5 mm, omnino glabris, i. e. margine dorsoque nec breviter glanduloso-pilosus; petalis 3.5-4 nec ca 2.5 mm latis notabilis. Ex affinitate *S. namdonensis* H. Smith sepalis lineari-oblongis vel oblongis nec late ovatis, margine semper glabris nec crebre albo-ferrugineo-

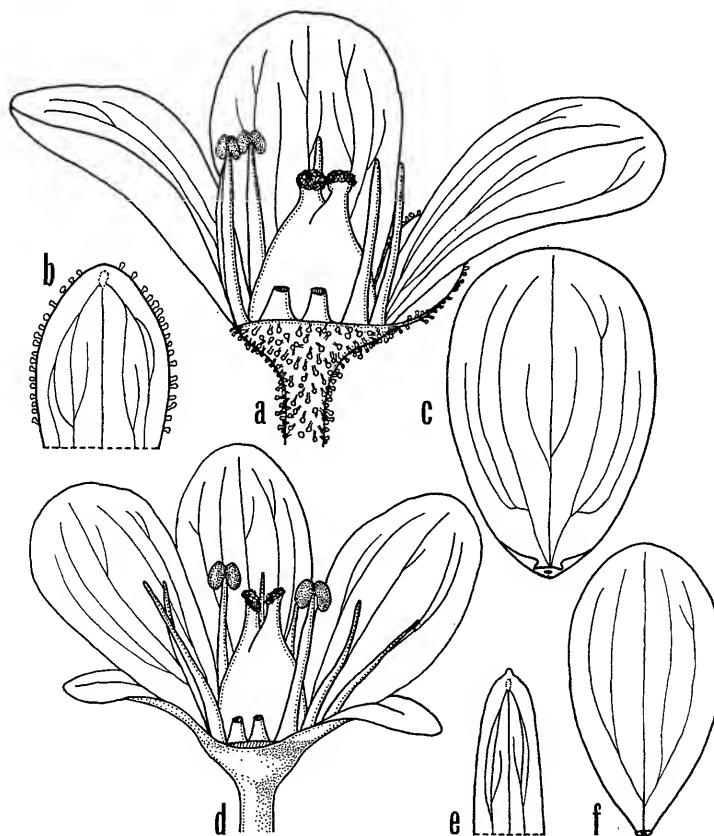


Fig. 2. *Saxifraga rolwalingensis* (a-c) and *S. lamminamensis* (d-f). a & d: a flower (the sepals, petal and filaments in front are removed). b & e: a sepal. c & f: a petal. All  $\times 5$ .

crispulo-pilosus, 3- nec 5-7-nervatis et petalis magnitudine  $6.5-7.5 \times 3.5-4$  nec ad  $11 \times 7$  mm, 3- nec 9-11-nervatis distincta. Habitu *S. implicans* H. Smith similis sed sepalis omnino glabris dorso marginaque non glanduloso-pilosus, nervis sub apice confluentibus non liberis; petalis obovato-oblongis vel anguste obovatis nec ovato-ellipticis non unguiculatis, nervis lateralibus pauci-ramosis et foliis basalibus 0.5-1 nec 1.5 cm latis recedit. A *S. rolwalingensi* H. Ohba sepalis linearioribus vel vere oblongis nec late oblongis nec ovatis, 1.8-2 nec 2-3.5(-4) mm

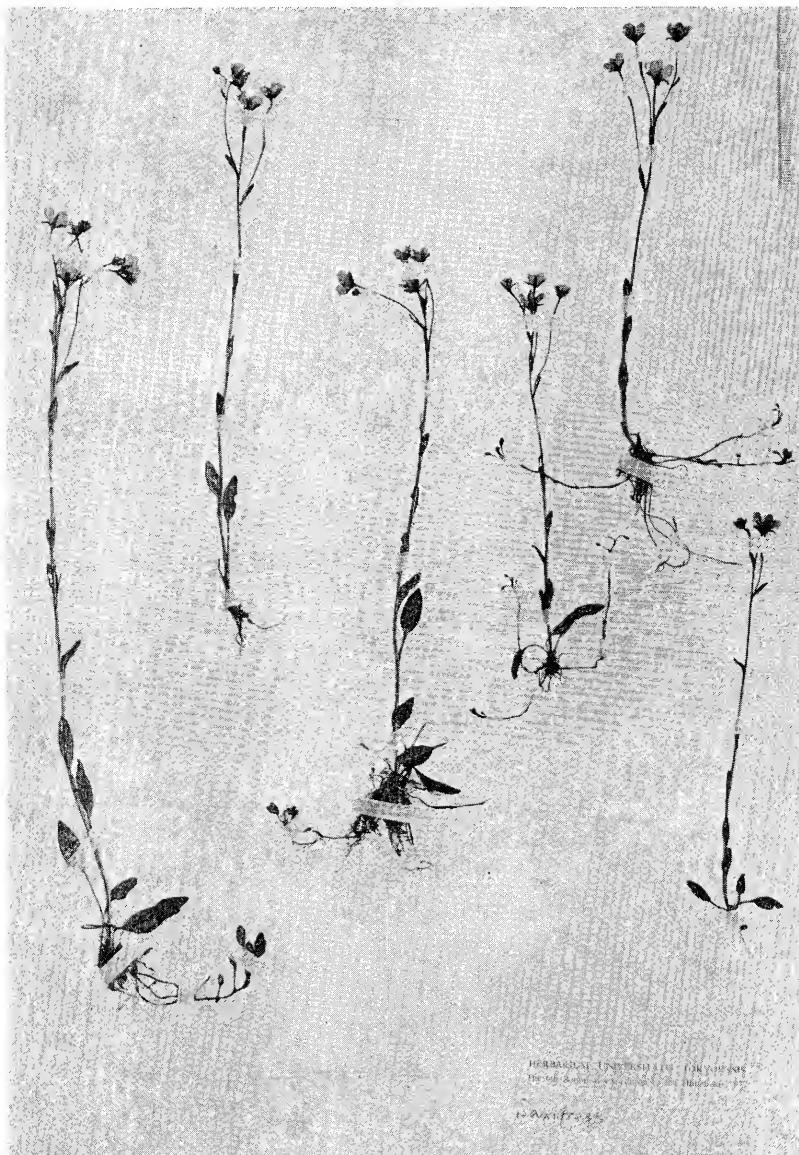


Fig. 3. *Saxifraga lamminamensis* H. Ohba (type).

latis, dorso margineque semper glabris non glanduloso-pilosis et folis caulinis superioribus lanceolatis nec ovato-oblongis, 0.3-0.4 nec 0.6-0.8 mm latis dignoscenda. Species haec ab *S. diversifolia* Wall. ex Ser. differt foliis late vel vere lanceolatis nec brevi-ovatis nec oblongo-ovatis, basi attenuatis nec cordatis; sepalis margine omnino glabris nec brevi-glanduloso-pilosis, cum nervis sub apice confluentibus nec parallelis nec liberis et petalis non unguiculatis.

Caudicula brevissima, basi gemmifera et saepe stolonifera. Caules floriferi solitarii, 10-25 cm longi, erecti, glabri vel sparsissime albido- vel albo-ferrugineo-pilos, remote 6-10-foliati. Folia basalia  $\pm$  emortua; caulina sursum decrescentia, utrinque sparse vel saprissime, in axillis modice vel dense pilis albidis vel albo-ferrugineis obsita, sed margine vulgo glabra. Foliorum basarium et caulinorum inferiorum lamina late lanceolata apice acuta basi attenuata, 1.5-2 cm longa 0.5-1 cm lata, longe petiolata, petioli 1-2 cm longis longitudine sursum decrescentibus, albido-pilos; caulinorum mediorum et superiorum lanceolata apice obtusa sessilia. Bracteae lanceolatae margine semper glabrae. Inflorescentia corymbosa, pauciflora, flores (1-)4-5(-10) gerens, axibus pilis confertis vel sparsis ferrugineis aut saepe glandulosis instructis.

Hypanthium dorso sparse breviter glanduloso-pilosum. Sepala linearis-oblunga vel vere oblonga, 4-4.5 mm longa 1.8-2 mm lata, omnino glabra, apice obtusa, trinervata, nervis sub apice confluentibus, in anthesi adscendentia. Petala lutea, obovato-oblunga vel anguste obovata, 6.5-7.5 mm longa 3.5-4 mm lata, per anthesin suberecta vel modice adscendentia, apice rotundata basi attenuata non unguiculata, ecallosa, trinervata sed nervis lateralibus pauci-ramosis. Stamina 4-4.5 mm longa, filamentis subulatis, erectis, versimiliter luteis; antheris reniformibus, ante dehiscentem luteis. Ovarium parte libera ca 3 mm longum, ovoideo-conoideum, stylis brevibus, ca 1 mm longis, stigmatibus, capitatis. Ovula in quoque loculo numero ca 150.

Habit. E. Nepal. Thudam—Lamni Nama, alt. 4100 m. 14 Aug. 1977. Ohashi, Kanai, Ohba & Tateishi 772366 (TI—Holotype); Chhurchathanga, alt. 3200-3600 m. O. K. O. T. 772247 & 773650 (TI); around Lamni Nama, alt. 4150 m. O. K. O. T. 770779 (TI). Bhutan. Chomolhari chakan, alt. 4100 m. Nishioka on 6 Sept. 1966 (TI).

Lamni Nama is a smallest camping site for herders on open stony slopes covered with a dwarf rhododendron carpet in a glaciated side-valley of Arun River. In 1977 the members of the University of Tokyo expedition (leader:

Prof. H. Ohashi) collected 7 species of the Hirculoideae group around here: these are *S. aristulata* Hook. f. et Thoms., *S. Kingiana* Engl. et Irmsch., *S. latiflora* Hook. f. et Thoms.<sup>1)</sup>, *S. lychnitis* Hook. f. et Thoms., *S. Moocroftiana* Wall. ex Sternb., *S. sikkimensis* Engl. and this new species.

#### Literature cited

Engler, A. & E. Irmscher. 1916 & 1919. *Saxifragaceae—Saxifraga*. Engl., Pfl.-reich IV-117 (Ht. 67) : 1-448 (1916); (Ht. 69) : 449-709, 1-47 (1919). Hara, H. 1979. *Saxifraga*. In: Hara, H. & L. H. J. Williams, An enumeration of the flowering plants of Nepal 2 : 151-156. Ohba, H. 1980-82. A revision of the Asiatic species of Sedoideae (Crassulaceae), Part 1-3. J. Fac. Sci. Univ. Tokyo, Sect. III, 12 : 337-405 (1980); 13 : 65-119 (1981); 121-174 (1982). Smith, H. 1958 & 1960. *Saxifraga* of the Himalaya. Bull. Brit. Mus. (Nat. Hist.) B. 2 : 83-129 (1958); 227-260 (1960).

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北半球に広く分布するユキノシタ属はヒマラヤ高山帯でも著しく多様化しており、ヒマラヤの高山帯植物相の形成過程を明らかにするうえで重要性が認められる分類群のひとつである。これまでの分類学的研究にもかかわらず、ヒマラヤのユキノシタ属の全体像を十分に把握するまでには至っていない。特に高山帯上部では様々な程度に隔離が進んでいると推察され、実際に形態上の軽微な差異しか認められない酷似の個体（集団）が異なる山頂・山系ごとに存在する。相互に軽微な差異によってのみ区別される個体・集団を分類学上どのように評価するか意見の分かれるところであるが、ここでは比較的種を細かくみる立場に立って研究を進めることにした。

ここで記載した 2 新種は Hirculus 節 Hirculoideae 群に分類される。2種のうち 1種、*S. rohwalingensis* は中部ネパール東縁のロルワリン谷源頭域で、他の 1種、*S. lamni-namensis* は東部ネパール・アルン川の支流とブータンのチョモラリ・チャカンの高山帯で採取されたもので、複数の形質における軽微な差の組合せによって近縁種や類似種から区別される。

1) **Saxifraga latiflora** Hook. f. et Thoms. in Journ. Linn. Soc. 2 : 71 (1857)—Engl. Monogr. Saxif. 122 (1872)—C. B. Clarke in Hook. f., Fl. Brit. Ind. 2 : 392 (1878)—Engl. et Irmsch. in Engl., Pfl.-reich IV-117-1, Ht. 67 : 101 (1916)—Hara, Fl. E. Himal. 117 (1966).

Hab. E. Nepal. Around Lamni Nama, alt. 4200 m. On river-side. Ohashi, Kanai, Ohba & Tateishi 773798 (TI).

Distr. E. Himalaya (E. Nepal, Sikkim and Bhutan). New to Nepal.